

IN THE CLAIMS:

Please amend the claims as follows:

Claim 1 (Canceled).

Claim 2 (Currently Amended): A photodetector according to claim 1, further comprising[[[:]]] including a photosensitive region where pixels are arranged two-dimensionally; each pixel being constructed by arranging a plurality of photosensitive portions outputting respective electric currents corresponding to incident light intensities adjacent to each other within a single plane; photosensitive portions on one side out of the plurality of photosensitive portions constituting each of said pixels are electrically connected to each other across the plurality of pixels arrayed in a first direction in the two-dimensional array, photosensitive portions on another side out of the plurality of photosensitive portions constituting each of said pixels are electrically connected to each other across the plurality of pixels arrayed in a second direction in the two-dimensional array, the photodetector comprising: first integrating circuits which are provided correspond to groups of the photosensitive portions on one side which are electrically connected across the plurality of pixels arrayed in the first direction, convert corresponding electric currents from the groups of photosensitive portions on one side into voltages, and output the voltages;

a first maximum value detecting circuit which detects a maximum value of the respective voltages outputted from the first integrating circuits;

a first A/D converter circuit which converts the respective voltages outputted from the first integrating circuits into digital values within an A/D conversion range from the maximum value detected by the first maximum value detecting circuit to a value smaller than the maximum value by a predetermined value and outputting the digital values;

a first level shift circuit for determining which determines a voltage by subtracting a predetermined value from the maximum value detected by the first maximum value detecting circuit, subtracting thus determined voltage from the respective voltages outputted from the first integrating circuits, and outputting outputs the resulting outputs to the first A/D converter circuit;
and

second integrating circuits which are provided correspond to groups of the photosensitive portions on another side which are electrically connected across the plurality of pixels arrayed in the second direction, convert corresponding electric currents from the groups of photosensitive portions on another side into voltages, and output the voltages;

a second maximum value detecting circuit for detecting a maximum value of the respective voltages outputted from the second integrating circuits;

a second A/D converter circuit for converting the respective voltages outputted from the second integrating circuits into digital values within an A/D conversion range from the maximum value detected by the second maximum value detecting circuit to a value smaller than the maximum value by a predetermined value and outputting the digital values; and

a second level shift circuit ~~for determining~~ which determines a voltage by subtracting a predetermined value from the maximum value detected by the second maximum value detecting circuit, subtracting thus determined voltage from the respective voltages outputted from the second integrating circuits, and ~~outputting~~ outputs the resulting outputs to the second A/D converter circuit.

Claim 3 (Currently Amended): A photodetector including a photosensitive region where pixels are arranged two-dimensionally;

~~[[one]] each~~ pixel being constructed by arranging a plurality of photosensitive portions outputting respective electric currents corresponding to incident light intensities adjacent to each other within a single plane;

~~one set of the photosensitive portions on one side out of the in a~~ plurality of photosensitive portions constituting ~~a plurality of each of said pixels arranged in a first direction in the two-dimensional arrangement being~~ are electrically connected to each other across the plurality of pixels arrayed in a first direction in the two-dimensional array;

~~the other set of the photosensitive portions on another side out of the in a~~ plurality of photosensitive portions constituting ~~a plurality of each of said pixels arranged in a second direction in the two-dimensional arrangement being~~ are electrically connected to each other across the plurality of pixels arrayed in a second direction in the two-dimensional array;

the photodetector comprising:

first integrating circuits~~[,]~~ which are provided so as to correspond to one group groups of photosensitive portions ~~electrically connected to each other in the plurality of pixels arranged~~

on one side which are electrically connected across the plurality of pixels arrayed in the first direction, for converting convert corresponding electric currents from the ~~one group~~ groups of photosensitive portions on one side into voltages, and outputting outputs the voltages;

a first minimum value detecting circuit for detecting a minimum value of the respective voltages outputted from the first integrating circuits;

a first A/D converter circuit for converting the respective voltages outputted from the first integrating circuits into digital values within an A/D conversion range from the minimum value detected by the first minimum value detecting circuit to a value greater than the minimum value by a predetermined value and outputting the digital values;

second integrating circuits[[,] which are provided so as to correspond to the other group groups of photosensitive portions ~~electrically connected to each other in the plurality of pixels arranged on another side which are electrically connected across the plurality of pixels arrayed in the second direction, for converting convert~~ corresponding electric currents from ~~the other group groups~~ of photosensitive portions on another side into voltages, and outputting outputs the voltages;

a second minimum value detecting circuit for detecting a minimum value of the respective voltages outputted from the second integrating circuits; and

a second A/D converter circuit for converting the respective voltages outputted from the second integrating circuits into digital values within an A/D conversion range from the minimum value detected by the second maximum value detecting circuit to a value greater than the minimum value by a predetermined value and outputting the digital values.

Claim 4 (Currently Amended): A photodetector according to claim [[1]] 2 or 3, wherein the photodetector is used together with a light source for irradiating an object with light, and arithmetically operates information concerning the light emitted from the light source.

Claim 5 (Original): A photodetector according to claim 4, wherein the information concerning the light is a luminous profile of reflected light of the light emitted from the light source in the first and second directions in the two-dimensional arrangement.

Claim 6 (Original): A photodetector according to claim 4, wherein the information concerning the light is a luminous profile of direct light of the light emitted from the light source in the first and second directions in the two-dimensional arrangement.